Modern Concepts of Cardiovascular Disease

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THE MANAGEMENT OF DISTURBED CARDIAC PATIENTS*

PART I

The purpose of this report is to describe for practicing cardiologists and other physicians the problems of disturbed behavior which arise in cardiac patients or in patients suspected of cardiac disease. This outline is based on clinical impressions and memories of actual patients and the problems they represented and is based on personal experience in the fields of cardiology and psychiatry. No attempt has been made to summarize the literature on these topics; also we have deliberately avoided presenting speculative explanations of possible psychologic or physiologic mechanisms involved in these problems. This report will take up a variety of situations in which the doctor learns that his patient with cardiac disease is upset, confused, over-active, or noisy. Sometimes it turns out that the disturbed patient with "cardiac" symptoms does not even have heart disease. Before discussing the matter of the different kinds of disturbed states, it is well to ask, "Under what circumstances should a physician suspect that some unusual disturbed state is present?" Obviously in severe disturbances the patient's shouting, struggling, running down the corridors, or weeping will command attention. Mild or early disturbed states may reveal themselves when the patient complains of insomnia, is tearful, does not speak, loses his temper at some fancied slight, demands his clothes so that he can go home to attend to some important business, refuses food, sniffs at his medicines, or protests because he is being discriminated against and is receiving tardy bed pan service. It is well to record these events as they may presage more abnormal behavior. One should record exactly what patients say and do, with the same exactness as describing the time, location, and intensity of a heart murmur. Usually, when a nurse reports that Mr. Smith doesn't seem to be acting right or seems mental or "balmy," it means that something is wrong. An exact recorded statement of the patient's words or behavior is much more helpful for exact diagnostic purposes than such vague statements as, "He had a strange look in his eyes."

Individual Conditions to be Recognized

The disorder which seems to be secondary to heart disease and heart failure is delirium, and this will be discussed first. Other conditions, some common and some rare, described later sometimes accompany heart disease and should be thought of in all disturbed patients seen in cardiology.

1. Delirium (toxic psychosis)

Delirium is a state of disturbed behavior and perception which is secondary to some other disease, complication of disease, or drug. In cardiac patients it may occur with any type of heart disease and probably in general in the sickest patients. Its relation to heart failure is not entirely clear since at times it appears when breathing is easier, chest is clearer, edema has disappeared, and the patient is, in other words, improving. The exact mechanisms of brain disturbances are still not clear, and explanations such as special personality structure, anoxia of the brain, cerebral edema are not proven. Probably elderly people, children, and patients with damaged brains are more apt to become delirious than young or middle-aged adults. The characteristic features of delirium are:

a) *Disturbance and Lability of Mood* — Mood lability takes different forms. There may be extreme irritability and argumentativeness. The patient may refuse to follow orders or may become very tearful and sentimental. The patient

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may appear more jovial or easily amused, or at another time he may be frightened, his fright varying from mild uneasiness to extreme fear and panic. At times the patient may change from one mood to the other. He may flare up and be extremely angry and soon after may make amusing remarks.

b) *Disorientation* — In general, delirious patients become confused as to where they are, as to what day it is, or as to how long he has been ill, and as to who the people are around them. This may not be constant or absolute as the patient may be confused at night, but in the day time he may be fairly clear. Also the patient may not know the date and may not be clear as to how long he has been in the hospital. He may tell one examiner that he is at home, and later on he may correctly name the hospital.

c) *Illusions* — (misinterpretations and hallucinations) — These are not usually pink elephants or purple snakes. An illusion is a false perception based on a misinterpretation of something that is actually there. For instance, a bed sheet is interpreted as a visitor, a rattling steam pipe is interpreted as rifle fire or the voice of a relative, a sun dial is interpreted as a woman selling flowers on the lawn, or the moulding on the ceiling is interpreted as a set of books stored around the top of a room. The patients may be over-alert to noises in the hall and may attach various personal meanings to these noises, or the patient may have true hallucinations — that is, false perceptions where the stimuli leading to them are not obvious to the examiner — the patient feels bugs are crawling over him, or that a bird is circling about, or that little chickens are walking around on the floor.

d) *General State* — The patient may have a general feeling that something is wrong in the atmosphere and that the doctors and nurses are "up to something," or that a party is going on in the ward, a meeting being held, or that his next door neighbor needs his attention.

The first step in the management of a patient with a delirious state is to determine what abnormal factors are present that might be corrected. Such factors as fever, heart failure, drugs, bacterial endocarditis, Sydenham's chorea, alcoholism, and various medical disorders are often found in patients who are delirious. In most of these cases in my experience several of these factors are present. A sound attitude for the examiner to take is to act on the assumption that, when a cardiac patient becomes delirious, something is wrong with the treatment and its course or that complications discovered or undiscovered are present.

Fever — It is well to re-examine the patient, look for fever and a cause of fever. Is there complicating pneumonia, a new coronary occlusion, or are there emboli, or is there an unrelated new infection?

Heart Failure — I have seen heart failure evidence itself by a delirious state in patients believed to be doing well from the cardiac standpoint. On reexamination after delirium appeared, it was found that the patient had rales in the chest and diminished vital capacity, which suggested that the patient was again decompensated. In general, decompensated cardiacs are more apt to be delirious; sometimes they become so while improving.

Drugs — It seems that almost all drugs are capable of either causing or contributing to the delirious state. Foremost on the list are sedative drugs such as barbiturates, opiates, and bromides; in addition diuretics, digitalis, atropine, cortisone, adrenocorticotropic hormone (ACTH), salicylates in large amount, alcohol, and some of the chemotherapeutic drugs seem to provoke deliria. Bromides are usually taken before the patient enters the hospital. In any case of delirium it is wise to estimate blood bromides. When the level is more than 150 mg. per 100 c.c. of blood, bromidism is suggested as an explanation of delirium. Digitalis and the various diuretic drugs have also seemed to be related to delirious states. It is less certain that digitalis is responsible where there are not other toxic manifestations. Usually one does not find complete correlation between starting a drug and the onset of delirium or stopping a drug and the disappearance of delirium. Probably deliria related to long-acting drugs persist longer. The general rule of management is never to omit a life-saving drug because of delirium but to try to change to another form of it if possible. If the use of a drug is optional or experimental, it is best to omit it.

Bacterial Endocarditis — In cardiac patients, particularly those with rheumatic heart disease, fever and delirium may indicate that bacterial encocarditis has developed. Delirium sometimes may be the presenting abnormality. Delirium may occur whether brain embolism has or has not occurred.

Sydenham's Chorea — In mild Sydenham's chorea, it is characteristic for the patient to show emotional lability, to be tearful, irritable, and out of sorts. In severe Sydenham's chorea, there may rarely be frank delirium. Also there is some evidence to suggest that a small proportion of patients develop unreasonable so-called psychopathic behavior as a sequel.

Alcoholism — In patients who have imbibed an excessive amount of alcohol for a number of years, it seems that development of heart failure, fever, or some other factor may provoke one of the so-called alcoholic psychoses. *Delirium tremens*, an illness of a few days' duration, is characterized by tremor, disorientation, mood disturbance, and rather vivid hallucinations. This may be preceded by convulsions. Other alcoholic psychoses may include a combination of Wernicke's and Korsakoff's syndromes with strabismus, nystagmus, retentive memory defect, confabulation and neuritis. It is not clear to what extent nutritional disturbance plays a role in the alcoholic psychoses, but Wernicke and Korsakoff's syndromes also occur in non-alcoholic patients with severe nutritional disturbances. Withdrawal of alcohol is again being considered as a factor in delirium tremens. Beri-beri heart disease is not usually seen with these complications in this country. In addition to the specific alcoholic disturbance there is the clinical impression that chronic alcoholic individuals are more apt to get non-specific deliria than the non-alcoholic patients.

Various Medical Disorders — We have the clinical impression, based on individual cases and without statistical substantiations, that disorders of various kinds such as hepatitis, severe anemia, pernicious anemia, gross imbalance of electrolytes including Na, K, Cl, use of cation exchange resins, uremia, infarction and hemorrhage of any part of the brain may contribute to delirious states in cardiac patients.

No one factor, but several factors may be associated with delirium and the same patient may have several of them. One may find in looking for the provoking factor of delirium in cardiac patients, or in any patients for that matter, that the patient is in heart failure, has fever, is taking a variety of drugs, and perhaps also drank too much whiskey in the past. The relation of various factors to delirium or to each other is not clear. Nothing has been said about the previous personality of the patient. There is no psychologic knowledge which allows the physician to predict which of his patients is apt to become delirious. Most statements which allege that the previous personality of the patient is responsible for the delirium are really involved in predicting the past — that is, merely stating at the present state of our knowledge that the type of person who gets a delirium must have been the type of person who was destined to develop a delirium.

2. Neurocirculatory Asthenia (anxiety neurosis, neurasthenia, effort syndrome).

This condition is mentioned here only because it is common; it is almost never a source of disturbed behavior. It may be the cause of a so-called heart attack which may bring the family physician to the patient's home in the middle of the night to reassure a patient in panic having an anxiety attack consisting of palpitation, breathlessness, smothering and choking, and a feeling of fear that she may faint, fall, or die.

3. Manic-Depressive Disease (depressed state).

This disorder may present primarily cardiovascular-respiratory symptoms resembling neurocirculatory asthenia. However other symptoms include: feeling of hopelessness and unworthiness, insomnia of a kind which wakes the patient early in the morning, the patient's feeling worse in the morning and better as the day goes on. There is anorexia, weight loss, and constipation. This disorder should be suspected if a patient seems to have neurocirculatory asthenia who has never had it before age 35 or if "neurocirculatory asthenia" does not respond to reassurance. This disease may appear alone, or, since it is not an uncommon illness, it may appear along with hypertension or hypertensive or coronary heart disease in middle-aged or elderly patients. It is important to recognize this illness and not to conclude that the patient has neurocirculatory asthenia or that he is just upset because his blood pressure is elevated and that he is worrying about this. This crucial point about this disorder is that it has one grave danger — *suicide* — which is an ever present risk even in these patients. It is well to share the responsibility of management of these patients with a psychiatrist. The question may arise in cardiac patients with depression as to whether the cardiologist should allow the psychiatrist to give electric shock therapy. Although most psychiatrists are convinced that electric shock therapy should be recommended for depressions, some recorded data suggest that this procedure neither shortens attacks nor leads to an unusual number of cures. Many cardiac patients with depressions are given this type of treatment, and it seems that cardiac accidents are infrequent. I know of one case, however, in which electric shock procedure was given to a patient with bundle branch block with the result that the patient died during the second electric shock procedure. The important point, then, as far as depressions are concerned, is for the cardiologist to think of this condition in a patient who seems to be upset, paces the floor, seems unreasonable about future prospects, and who seems to have developed "neurocirculatory asthenia" late in life. Thinking of this diagnosis may prevent a suicide.

4. Thyrotoxicosis.

Thyroid disease should be thought of as a rare but treatable cause of unexplained psychiatric disease especially if there is tachycardia or auricular fibrillation. The cases which the author has seen have been characterized by disturbance of mood and activity, sometimes with delusions and hallucinations. The diagnosis of thyrotoxicosis is made mainly by remembering the possibility. A normal or low basal metabolic rate, if the patient will cooperate for the test, makes thyrotoxicosis improbable. A blood level of protein-bound iodine above 8 gamma per cent, provided no iodides have been administered, or a radioactive iodine uptake of over 60 per cent of original dose in a 48-hour test indicates thyrotoxicosis. For completeness, one may mention a rare form of tachycardia plus disturbed psychologic state. At times, malingerers or psychopathic personality patients ingest thyroid secretly. Emotional over-reaction, tachycardia, tremor, and sometimes unreasonable ward behavior characterize this state. A confession or detecting the patient taking thyroid makes this diagnosis as does a discrepancy between a high level of protein-bound iodine concentration and a radioactive iodine uptake which is nil. Myxedema may include in addition to cardiac involvement irritability, unreasonable behavior, and disturbed mood, especially a depressed mood.

5. "Epilepsy."

Recurring seizures or convulsions may occur in cardiac patients, just as they may in other persons, and require investigation. After a convulsion, there may be a period of confusion with disturbed, combative, or sullen behavior. This is apt to go on for hours or a few days but not for weeks or months. The diagnosis is difficult when the convulsion itself has not been observed. Cardiac patients may have convulsions on the basis of Adam-Stokes syndrome. Sometimes embolism leads to an immediate convulsion. Sometimes cortical infarcts lead to recurring seizures and, although other causes of seizures should be sought for, Dodge and Richardson have showed that about 5% of patients with pathologically proven cerebral infarction or hemorrhage and about a quarter of these with old cortical infarcts have recurring seizures presumably on that basis.

6. Vascular Disease of the Brain.

Patients who have had strokes with or without heart disease may show disturbed behavior. The relation of disturbed behavior to specific lesions in the brain has not as yet been determined although we are impressed with the possibility that temporal lobe or midbrain lesions may show special association with such disorders. Many patients show marked changes in mood, thinking, and behavior on the basis of multiple brain infarctions. This condition is sometimes referred to as *cerebral arteriosclerosis*, and there is usually a history of strokes and neurologic signs.

7. Paresis.

In patients with syphilitic aotric insufficiency or syphilitic aortic aneurysm, disturbed behavior may sometimes suggest not delirium but actual general paresis (syphilitic meningeo-encephalitis). In this country, this is rare, but should be thought of since it is treatable. I recall a patient, who was being managed for rheumatic aortic insufficiency, in whom the discovery of general paresis turned the attention toward the correct diagnosis of syphilitic aortic insufficiency and aortic aneurysm. Paresis is an illness with the onset about twenty years after syphilitic infection, which includes progressive deterioration of memory, ability to calculate judgment and behavior, mood disturbances, and neurologic signs which include Argyll-Robertson pupils, slurred speech, tremors, and exaggerated deep tendon reflexes. There may be paralyses and convulsions. Patients may become noisy, overactive, depressed, overtalkative, may walk on the ledge of the hospital windows, demand to leave the hospital, or may become combative. Characteristic spinal fluid includes positive Wassermann, high protein, lymphocytic pleocytosis, and sometimes a first zone (paretic) gold sol curve.

8. Senile Psychosis.

This is a common condition and a growing problem. It may complicate heart disease, or heart disease may complicate it. It is my impression that the disorder is unusual before the age of 70. Perhaps the rare patient diagnosed as having Alzheimer's disease represents the identical disorder in younger patients. This should not be confused with vascular disease of the brain. Patients may show poor memory particularly for recent events and in some cases lose ability to make new memories. A patient's general behavior may be uncontrolled; he may wander around the home or street unclad, set himself or the house on fire by carelessness with cigarettes, or make unprovoked remarks or scenes. In contrast to delirium where the prognosis for recovery is excellent, this disorder does not have a good prognosis either for improvement of behavior or for life. These patients survive only about two years after institutionalization.

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AMERICAN HEART ASSOCIATION FELLOWSHIPS AND RESEARCH GRANTS-IN-AID

Applications for Established Investigators and for Research Fellows for the fiscal year 1954-1955 must be received in the office of the Association not later than September 15, 1953.

Applications for Research Grants-In-Aid for 1954-1955 must be received not later than December 1, 1953.

Information booklets and application blanks may be obtained from the Medical Director.

ANNUAL MEETING OF THE AHA, 1954

The Annual Meeting of the American Heart Association in 1954 will be held at the Conrad Hilton Hotel in **Chicago.** The Assembly Panels and the General Assembly will be held on Thursday and Friday, April 1 and 2, and will be followed by a specific scientific program on clinical cardiology on Saturday and Sunday, April 3 and 4, conducted under the auspices of the newly formed Section on Clinical Cardiology of the Scientific Council. These sessions will immediately precede the annual meeting of the American College of Physicians.

SCIENTIFIC PROGRAM OF THE SECTION ON CLINICAL CARDIOLOGY 1954

The Section on Clinical Cardiology of the American Heart Association will sponsor a two-day scientific program at the Conrad Hilton Hotel in Chicago on April 3 and 4, 1954. This program will constitute a portion of the Annual Meeting of the American Heart Association and immediately precedes the Annual Sessions of the American College of Physicians. The meeting will be open to all members of the medical profession. Doctor Wright R. Adams of Chicago is Chairman of the Program Committee. Members of the American Heart Association who wish to present papers should send a 250-300 word abstract of the proposed paper to Doctor Charles D. Marple, Medical Director, American Hear Association, Inc., 44 East 23rd Street, New York 10, New York. *All papers should be on subjects of distinct clinical interest. The deadline for the receipt of abstracts is January 1, 1954.*

ANNUAL SCIENTIFIC SESSIONS, 1954, and THE SECOND INTERNATIONAL CONGRESS OF CARDIOLOGY

The 27th Scientific Sessions of the American Heart Association will *not* be held at the usual time in 1954, but will take place following the 2nd. International Congress of Cardiology in September. The International Congress of Cardiology will be held in **Washington, D.C.,** September 12 through 15, 1954 and the Scientific Sessions of the American Heart Association will also be held in Washington, September 16 through 19.